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TO: Commissioner of Patents  
FAX NO.: 703-872-9306  
FROM: Kin-Wah Tong, Esq.  
DATE: May 9, 2005  
MATTER: U.S. Serial No.: 09/728,192 filed: December 1, 2000  
DOCKET NO.: SRI-009C (PACK/4330-2)  
APPLICANT: Ogier

The following has been received in the U.S. Patent and Trademark Office on the date of this facsimile:

☐ Petition  
☐ Disclosure Statement & PTO-1449  
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PTO/SB/21 (09-04)


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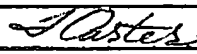
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<b>TRANSMITTAL FORM</b>  <i>(to be used for all correspondence after initial filing)</i>		Application Number	09/728,192
		Filing Date	December 1, 2000
		First Named Inventor	Ogier
		Art Unit	2881
		Examiner Name	Ton, Anthony T.
Total Number of Pages in This Submission		Attorney Docket Number	SRI-009C (PACK/4330-2)

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
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Printed Name	Kin-Wah Tong, Esq.		
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<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Application Number	09/728,192
		Filing Date	December 1, 2000
		First Named Inventor	Ogier
		Examiner Name	Tan, Anthony T.
		Art Unit	2661
TOTAL AMOUNT OF PAYMENT (\$) 250		Attorney Docket No.	SRI-008C (PACK4330-2)

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**FEE CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	_____
Design	200	100	100	50	130	65	_____
Plant	200	100	300	150	160	80	_____
Reissue	300	150	500	250	600	300	_____
Provisional	200	100	0	0	0	0	_____

**2. EXCESS CLAIM FEES**

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 30 (including Reissues)	200	100
Multiple dependent claims	360	180
<u>Total Claims</u>	<u>Extra Claims</u>	<u>Fee (\$)</u>
_____ - 20 or HP = _____	x _____	= _____
HP = highest number of total claims paid for, if greater than 20.		
<u>Indep. Claims</u>	<u>Extra Claims</u>	<u>Fee (\$)</u>
_____ - 3 or HP = _____	x _____	= _____
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**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).


Total Sheets Extra Sheets Number of each additional 50 or fraction thereof Fee (\$) Fee Paid (\$)  
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Signature		Registration No. (Attorney/Agent)	38,400	Telephone	732-530-9404
Name (Print/Type)	Kin-Wah Tong	Date	May 9, 2005		

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**PATENT**  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

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**In re Application of:  
Ogier**

**Serial No.: 09/728,192**

**Confirmation No.: 4499**

**Filed: December 1, 2000**

**For: A Reduced-Overhead Protocol  
For Discovering New Neighbor  
Nodes And Detecting The  
Loss Of Existing Neighbor  
Nodes In A Network**

[illegible]

**Group Art Unit: 2661**

**Examiner:** Ton, Anthony T.

**MAIL STOP APPEAL BRIEF - PATENTS**  
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**Dear Sir:**

# APPEAL BRIEF

Appellant submits this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2661 dated January 24, 2005, finally rejecting claims 11-28. Please charge the fee of \$250.00 for filing this brief and all other fees that may be required to make this Brief timely and acceptable to the Patent Office, to Deposit Account No. 20-0782.

**REAL PARTY IN INTEREST**

**The real party in interest is SRI International, Inc., located in Menlo Park, CA.**

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### **RELATED APPEALS AND INTERFERENCES**

The Appellant knows of no related appeals or interferences that might directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

### **STATUS OF CLAIMS**

Claims 11-28 are pending in the application. Original claims 1-10 have been cancelled. Claims 11-28 were originally presented in the application. Claims 11-28 stand rejected in view of several references as discussed below. The rejection of claims 11-28 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

### **STATUS OF AMENDMENTS**

One amendment to the claims was submitted after a non-final rejection dated November 19, 2003. A non-final rejection of the amended claims was then issued on June 17, 2004, and affirmed in a final rejection issued on January 24, 2005, from which Appellant now appeals.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

The present invention provides a reduced-overhead protocol for discovering new neighbor nodes and detecting the loss of existing neighbor nodes in a network. In the embodiment of independent claim 11, a method generally comprises, in a network having a plurality of nodes, maintaining 294 in a receiving node a neighbor table comprised of each known neighbor node of the receiving node and the communication status of each known neighbor node (Pg. 52, Lines 2-19; Pg. 54, Line 3-Pg. 56, Line 3; Fig. 14). The method further comprises receiving 252 a HELLO message containing an address of a new sending node and transmitting 254 a NEIGHBOR message that includes an address of the receiving node to the new sending node (Pg. 48, Lines 15-22; Fig. 12). The method then receives 256 a NEIGHBOR ACK message from the new sending node and updates 294 the neighbor table to reflect discovery of the new sending node and the communication status of the new sending node (Pg. 48, Line 22–

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Pg. 49, Line 1; Pg. 52, Lines 1-19; Figs. 12 and 14). Finally, the method comprises transmitting at least one HELLO message comprising only a list of neighbor nodes that have communication status changes (Pg. 53, Lines 5-19; Fig. 14).

In the embodiment of independent claim 20, a network having a plurality of nodes generally provides a new sending node i and a receiving node j having a neighbor table comprised of each known neighbor node of the receiving node j and the communication status of each known neighbor node (Pg. 52, Lines 2-19; Fig. 12), wherein the receiving node j receives a HELLO message from the new sending node i containing an address of the new sending node i (Pg. 48, Lines 15-19; Fig. 12), wherein the receiving node j transmits a NEIGHBOR message that includes an address of the receiving node j to the new sending node i (Pg. 48, Lines 20-22; Fig. 12), wherein the receiving node j receives a NEIGHBOR ACK message from the new sending node i (Pg. 48, Line 22-Pg. 49, Line 1; Fig. 12), wherein the receiving node j updates the neighbor table to reflect discovery of the new sending node i and communication status of the new sending node i (Pg. 54, Line 3-Pg. 56, Line 3; Fig. 14), and wherein the receiving node j transmits at least one HELLO message comprising only a list of neighbor nodes that have communication status changes (Pg. 53, Lines 5-19; Fig. 14).

#### **GROUND OF REJECTION**

1. Claims 11-28 stand rejected under 35 U.S.C. §103(a) as being obvious over *Vu* (U.S. Patent No. 5,056,085, hereinafter "*Vu*") in view of *Mahany et al.* (U.S. Patent No. 5,657,317, hereinafter "*Mahany*").

#### **THE REFERENCES**

The Examiner relies on the following references:

Author	Publication Title or Reference number	Publication Date
<i>Vu</i>	U.S. Patent No. 5,056,085	October 8, 1991
<i>Mahany et al.</i>	U.S. Patent No. 5,657,317	August 12, 1997

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### BRIEF DESCRIPTION OF THE REFERENCES

U.S. Patent No. 5,056,085 to *Vu* teaches a method for routing broadcast packets in a packet-switched network. Broadcast packets are periodically sent out in a constrained flood broadcast (See, *Vu*, column 5, lines 4-11 and Fig. 18, step 2). If a receiving node has previously received a given broadcast packet, the receiving node discards the packet. However, if the receiving node has not previously received the broadcast packet, the receiving node sends a packet receipt acknowledgement back to the node from which the broadcast packet was sent (See, *Vu*, column 5, lines 17-32 and Fig. 18, step 6). The receiving node also forwards the broadcast packet to further nodes in the network, e.g., in accordance with the constrained flood broadcast (See, *Vu*, column 5, lines 17-32 and Fig. 18, step 8). Each node in the network also records the other nodes from which it has received acknowledgments, and the recording node continues to forward further broadcast packets to those same other nodes until new packet forwarding routes are determined (See, *Vu*, column 5, lines 50-55; column 6, lines 3-7 and Fig. 18, step 11).

United States Patent No. 5,657,317 to *Mahany* teaches a hierarchical communication system in which a plurality of wireless local area networks (LANs) having different characteristics are used to link portable or mobile computing devices (See, *Mahany*, Abstract). Each LAN includes a base station that acts as a control point for the devices on the local network and facilitates mobility of the linked devices by transmitting HELLO messages to the devices (See, *Mahany*, column 13, lines 26-28 and column 25, lines 11-12). These HELLO messages contain information about neighboring base stations, such as pending changes in the network's global communication parameters (e.g., hopping sequences, spreading codes or channel frequencies) (See, *Mahany*, column 25, lines 27-28 and column 30, lines 4-11), the neighboring base station's address, and the ability of the neighboring base station to handle additional traffic, among other information (See, *Mahany*, column 29, lines 57-63). By communicating information about neighboring base stations, a base station essentially advises its associated portable devices on how to capture messages from those neighboring base stations, which may have different communication parameters (See, *Mahany*, column 30, lines 4-11).

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## **ARGUMENT**

### **THE ISSUES UNDER 35 U.S.C. §103**

#### **A. 35 U.S.C. §103(a) – *Vu* in view of *Mahany***

##### **1. Claims 11 and 20**

The Examiner rejected claims 11, 15-19, 20 and 24-28 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

The Examiner alleges, for example, that "In Regarding to Claim 11: *Vu* disclosed a method of operating a network having a plurality of nodes, comprising: maintaining in a receiving node a neighbor table comprised of each known neighbor node of the receiving node and the communication status of each known neighbor node (see col. 8 lines 21-34); receiving a message containing an address of a new sending node (see col. 5 lines 14-19); transmitting a NEIGHBOR message that includes an address of the receiving node to said new sending node (see col. 3 lines 45-49 and col. 8 lines 35-39); receiving a NEIGHBOR ACK message from said new sending node (see col. 7 lines 6-10 and col. 5 lines 41-44) ... ; and updating said neighbor table to reflect discovery of said new sending node and communication status of said new sending node (see col. 2 lines 53-59, col. 3 lines 22-26, col. 4 lines 25-30 and col. 8 lines 42-51)" However, the Examiner concedes on the record that *Vu* does not explicitly teach a HELLO message, or the step of transmitting at least one HELLO message comprising only a list of neighbor nodes that have communication status changes. Nevertheless, the Examiner then concludes that *Mahany* teaches such a message and step (col. 25 lines 37-34; and col. 30 lines 37-39). The Examiner is incorrect and has misconstrued the teachings of *Vu* and *Mahany*.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest every limitation of the claimed invention. Namely, *Vu* in view of *Mahany* does not teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message comprising only a list of that node's neighbor nodes that have experienced



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communication (e.g., link) status changes, as positively recited by independent claims 11 and 20.

Specifically, Appellant's claims 11 and 20 recite:

11. A method of operating a network having a plurality of nodes, comprising:  
maintaining in a receiving node a neighbor table comprised of each known neighbor node of the receiving node and the communication status of each known neighbor node;  
receiving a HELLO message containing an address of a new sending node;  
transmitting a NEIGHBOR message that includes an address of the receiving node to said new sending node;  
receiving a NEIGHBOR ACK message from said new sending node;  
updating said neighbor table to reflect discovery of said new sending node and communication status of said new sending node; and  
transmitting at least one HELLO message comprising only a list of neighbor nodes that have communication status changes. (Emphasis added)

20. A network having a plurality of nodes, comprising:  
a new sending node; and  
a receiving node having a neighbor table comprised of each known neighbor node of the receiving node and the communication status of each known neighbor node, wherein said receiving node receives a HELLO message from said new sending node containing an address of said new sending node, wherein said receiving node transmits a NEIGHBOR message that includes an address of the receiving node to said new sending node, wherein said receiving node receives a NEIGHBOR ACK message from said new sending node, wherein said receiving node updates said neighbor table to reflect discovery of said new sending node and communication status of said new sending node, and wherein said receiving node transmits at least one HELLO message comprising only a list of neighbor nodes that have communication status changes. (Emphasis added)

The Appellant's invention, with regards to at least claim 11, is directed, at least in part, to a reduced-overhead protocol for detecting the existence of new neighbor nodes and the loss of existing neighbor nodes in a mobile wireless network. Specifically, the Appellant's invention enables network nodes to efficiently detect and broadcast the statuses of neighboring nodes by reporting only a list of neighbor nodes having communication (e.g., link) status changes. Each node in the network maintains a neighbor table that has an entry for every known neighbor node and their corresponding states (e.g., connected or "heard", disconnected or "lost"). When a node confirms the existence of a new neighbor node, or confirms a new communication state for a

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previously known neighbor node, the confirming node then sends a HELLO message to other nodes in the network. This HELLO message contains only a list of the neighbor nodes that have experienced a state change (including newly detected neighbor nodes). Thus, a tremendous amount of network bandwidth may be conserved by transmitting only the new information.

The combination of *Vu* and *Mahany* does not teach such a method, as described in Appellant's independent claims. First, the broadcast routing table taught by *Vu*, which the Examiner equates to Appellant's claimed neighbor table, tracks only the identities of neighbor nodes from which a node has received packets (See, *Vu*, column 4, lines 25-30). *Vu* makes no mention of tracking the communication statuses (e.g., connected, disconnected) of these neighbor nodes. Furthermore, the constraint table taught by *Vu* tracks only packets received by a node, and the packets' associated broadcast routing tables.

*Mahany* does not bridge this gap in the teachings of *Vu*. Specifically, *Mahany* does not teach tracking, at a node (e.g., in a local table), the communication statuses of neighboring nodes. By contrast, *Mahany* teaches broadcasting a HELLO message to devices on a network to signal impending changes in the network's communication parameters (e.g., hopping sequences, spreading codes or channel frequencies). This is not the same as maintaining a list including individual nodes' communication statuses. Thus, *Vu* and *Mahany* fail, in any permissible combination, to teach, show or suggest maintaining a neighbor table that comprises both a list of known neighbor nodes and the communication status of each known neighbor node, as claimed by Appellant's claims 11 and 20.

Second, neither *Vu* nor *Mahany* teaches, shows or suggests transmitting a HELLO message that comprises only a list of neighbor nodes that have communication status changes, as claimed by Appellant's claims 11 and 20. As discussed above, the Examiner concedes that *Vu* does not teach this limitation. The Examiner alleges that *Mahany* does teach such a limitation; however, the Appellant disagrees with this interpretation of *Mahany's* teachings. The portions of *Mahany* that the Examiner cites to support this assertion teach, at most, a HELLO message including information about pending changes in a network's global communication parameters (e.g., access interval

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durations, hop sequences, etc.). This is not the same as transmitting the communication status changes (e.g., changes that have already happened) of individual nodes in the network. Informing devices connected to the network about upcoming network communication parameter changes, as taught by *Mahany*, enables those devices to subsequently make the changes in a coordinated fashion (See, *Mahany*, column 25, lines 29-33: "If the local NET is changing Access Interval durations or hope sequences, for instance, changes may be communicated in several consecutive HELLOs so that the information is reliably communicated to all NET constituents, permitting all devices to make the change in a coordinated fashion."). By contrast, communicating changes in individual nodes' communication or link statuses, as claimed by the Appellant, enables a node to identify neighboring nodes with which the node can establish bi-directional communications.

Third, as neither *Vu* nor *Mahany* teaches, shows or suggests transmitting a HELLO message that includes a list of neighbor nodes having communication status changes, it follows that *Vu* and *Mahany* do not, in any permissible combination, teach a HELLO message that comprises only a list of neighbor nodes having communication status changes, as claimed by Appellants in claims 11 and 20. In fact, the HELLO message taught by *Mahany* may include a variety of information about the network (See, *Mahany*, column 29, lines 57-63: "HELLO messages ... may indicate, for example, addresses of neighboring bases, their COST, the hopping sequences, hopping sequence indices, number of Access Intervals per hop, and NET clock."). One thing the HELLO message taught by *Mahany* does not include, however, is a list of neighbor nodes having communication (e.g., link) status changes.

In rejecting claims under 35 U.S.C. §103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See *In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or

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knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. Denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp. 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that independent claims 11 and 20 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

## 2. Claims 12 and 21

The Examiner rejected claims 12 and 21 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 12 and 21. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 12 and 21 respectively depend. Thus, claims 12 and 21 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message including a list of neighbor nodes that have their communication (e.g., link) status changed to a heard (e.g., connected) status, as positively recited by claims 12 and 21.

Specifically, Appellant's claims 12 and 21 recite:

12. The method of claim 11, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a heard status, wherein neighbor nodes in the heard status have been heard by the receiving node but have not been

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determined to have heard a previous HELLO message from the receiving node.  
(Emphasis added)

21. The network of claim 20, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a heard status, wherein neighbor nodes in the heard status have been heard by the receiving node but have not been determined to have heard a previous HELLO message from the receiving node.  
(Emphasis added)

The Examiner alleges that it would be obvious to one of ordinary skill in the art to modify the teachings of *Vu* and *Mahany* to implement a HELLO message including a list of neighbor nodes that have their communication status changed to a heard status. However, as discussed above with reference to the rejection of independent claims 11 and 20, the combination of *Vu* and *Mahany* fails to teach, show or suggest a HELLO message that includes a list of neighbor nodes having communication (e.g., link) status changes. Thus, it follows that the combination of *Vu* and *Mahany* likewise fails to teach, show or suggest a HELLO message that includes a list of neighbor nodes having their communication status changed to heard status.

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 12 and 21 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

### 3. Claims 13 and 22

The Examiner rejected claims 13 and 22 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 13 and 22. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 13 and 22 respectively depend. Thus, claims 13 and 22 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a

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plurality of nodes in which a node transmits at least one HELLO message including a list of neighbor nodes that have their communication (e.g., link) status changed to a symmetric status, as positively recited by claims 13 and 22.

Specifically, Appellant's claims 13 and 22 recite:

13. The method of claim 11, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a symmetric status, wherein neighbor nodes in the symmetric status have been heard by the receiving node and have been determined to have heard a previous HELLO message from the receiving node. (Emphasis added)

22. The network of claim 20, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a symmetric status, wherein neighbor nodes in the symmetric status have been heard by the receiving node and have been determined to have heard a previous HELLO message from the receiving node. (Emphasis added)

The Examiner alleges that it would be obvious to one of ordinary skill in the art to modify the teachings of *Vu* and *Mahany* to implement a HELLO message including a list of neighbor nodes that have their communication status changed to a symmetric status. However, as discussed above with reference to the rejection of independent claims 11 and 20, the combination of *Vu* and *Mahany* fails to teach, show or suggest a HELLO message that includes a list of neighbor nodes having communication (e.g., link) status changes. Thus, it follows that the combination of *Vu* and *Mahany* likewise fails to teach, show or suggest a HELLO message that includes a list of neighbor nodes having their communication status changed to symmetric status. The portion of *Mahany* that the Examiner cites to support this rejection teaches a binding process in which two network devices exchange a handshake in order to establish a spontaneous LAN. This is not the same as transmitting a HELLO message that includes a list of neighbor nodes having their communication status changed to symmetric status, as recited in Appellant's claims 13 and 22.

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims

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13 and 22 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

4. Claims 14 and 23

The Examiner rejected claims 14 and 23 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 14 and 23. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 14 and 23 respectively depend. Thus, claims 14 and 23 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message including a list of neighbor nodes that have their communication (e.g., link) status changed to a lost status, as positively recited by claims 14 and 23.

Specifically, Appellant's claims 14 and 23 recite:

14. The method of claim 11, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a lost status, wherein a neighbor node is determined to be in the lost status when a HELLO message containing the address of that neighbor node has not been heard by the receiving node in a predetermined period of time. (Emphasis added)

23. The network of claim 20, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a lost status, wherein a neighbor node is determined to be in the lost status when a HELLO message containing the address of that neighbor node has not been heard by the receiving node in a predetermined period of time. (Emphasis added)

The Examiner alleges that it would be obvious to one of ordinary skill in the art to modify the teachings of *Vu* and *Mahany* to implement a HELLO message including a list of neighbor nodes that have their communication status changed to a lost status. However, as discussed above with reference to the rejection of independent claims 11

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and 20, the combination of *Vu* and *Mahany* fails to teach, show or suggest a HELLO message that includes a list of neighbor nodes having communication (e.g., link) status changes. Thus, it follows that the combination of *Vu* and *Mahany* likewise fails to teach, show or suggest a HELLO message that includes a list of neighbor nodes having their communication status changed to lost status.

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 14 and 23 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

#### 5. Claims 15 and 24

The Examiner rejected claims 15 and 24 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 15 and 24. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 15 and 24 respectively depend. Thus, claims 15 and 24 are patentable at least for the same reasons. Furthermore, claims 15 and 24 recite the additional limitation of wherein "lost" nodes are nodes that have not been heard within a predetermined period of time corresponding to a HELLO-INTERVAL multiplied by a predetermined number K.

Specifically, Appellant's claims 15 and 24 recite:

15. The method of claim 14, wherein the predetermined period of time corresponds to a HELLO-INTERVAL period multiplied by a predetermined number K. (Emphasis added)

24. The network of claim 23, wherein the predetermined period of time corresponds to a HELLO-INTERVAL period multiplied by a predetermined number K. (Emphasis added)

The additional limitation of considering nodes that have not been heard within a predetermined period of time (corresponding to a HELLO-INTERVAL multiplied by a



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predetermined number K) as "lost" better enables the inventive method to efficiently identify nodes that have communication status changes, thus improving the efficiency and accuracy with which the method reports only the list of neighbor nodes that have communication status changes.

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 15 and 24 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

6. Claims 16 and 25

The Examiner rejected claims 16 and 25 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 16 and 25. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 16 and 25 respectively depend. Thus, claims 16 and 25 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message containing the address of the receiving node but not the address of a neighbor node that was previously in the list of neighbor nodes in the lost state, as positively recited by claims 16 and 25.

Specifically, Appellant's claims 16 and 25 recite:

16. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing the address of the receiving node but not the address of a neighbor node that was previously in the list of neighbor nodes in the lost state. (Emphasis added)

25. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing the address of the receiving node but not the address of a neighbor node that was previously in the list of neighbor nodes in the lost state. (Emphasis added)

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The additional limitation of transmitting the address of the receiving node, but not the address of a neighbor node that was previously in the list of neighbor nodes in the lost state, better enables network nodes operating in accordance with the inventive method to efficiently identify nodes that have communication status changes, thus improving the efficiency and accuracy with which the nodes maintain their respective neighbor tables.

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 16 and 25 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

#### 7. Claims 17 and 26

The Examiner rejected claims 17 and 26 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 17 and 26. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 17 and 26 respectively depend. Thus, claims 17 and 26 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status, as positively recited by claims 17 and 26.

Specifically, Appellant's claims 17 and 26 recite:

17. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status. (Emphasis added)

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26. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status. (Emphasis added)

The additional limitation of transmitting a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status, better enables network nodes operating in accordance with the inventive method to efficiently identify nodes that have communication status changes, thus improving the efficiency and accuracy with which the nodes maintain their respective neighbor tables

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 17 and 26 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

8. Claims 18 and 27

The Examiner rejected claims 18 and 27 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 18 and 27. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 18 and 27 respectively depend. Thus, claims 18 and 27 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a symmetric status, as positively recited by claims 18 and 27.

Specifically, Appellant's claims 18 and 27 recite:

18. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing a list of neighbor nodes in a lost status, wherein

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that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a symmetric status. (Emphasis added)

27. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a symmetric status. (Emphasis added)

The additional limitation of transmitting a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a symmetric status, better enables network nodes operating in accordance with the inventive method to efficiently identify nodes that have communication status changes, thus improving the efficiency and accuracy with which the nodes maintain their respective neighbor tables

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 18 and 27 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

9. Claims 19 and 28

The Examiner rejected claims 19 and 28 in the Final Office Action under 35 U.S.C. 103 as being unpatentable over *Vu* in view of *Mahany*. The rejection is respectfully traversed.

Primarily, the Appellant submits that *Vu* and *Mahany* do not, in any permissible combination, teach, show or suggest all of the limitations of claims 19 and 28. As discussed above, *Vu* and *Mahany* do not teach, show or suggest all of the limitations of independent claims 11 and 20, from which claims 19 and 28 respectively depend. Thus, claims 19 and 28 are patentable at least for the same reasons. Moreover, *Vu* and *Mahany* also fail to teach, show or suggest a method for operating a network having a plurality of nodes in which a node transmits at least one HELLO message containing a list of neighbor nodes in a symmetric status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status, as positively recited by claims 19 and 28.

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Specifically, Appellant's claims 19 and 28 recite:

19. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing a list of neighbor nodes in a symmetric status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status. (Emphasis added)

28. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing a list of neighbor nodes in a symmetric status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status. (Emphasis added)

The additional limitation of transmitting a list of neighbor nodes in a symmetric status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status, better enables network nodes operating in accordance with the inventive method to efficiently identify nodes that have communication status changes, thus improving the efficiency and accuracy with which the nodes maintain their respective neighbor tables

Appellant submits that the Examiner has failed to establish a factual basis to support the legal conclusion of obviousness. Therefore, Appellant asserts that claims 19 and 28 are not made obvious by the teachings of *Vu* and *Mahany* and, as such, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

### **CONCLUSION**

For the reasons advanced above, Appellant respectfully urges that the rejections of claims 11-28 as being unpatentable under 35 U.S.C. §103 are improper. Reversal of the rejections in this appeal is respectfully requested.

If necessary, please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 20-0782, and please credit any excess fees to the above referenced deposit account.

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Respectfully submitted,

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### CLAIMS APPENDIX

11. A method of operating a network having a plurality of nodes, comprising:
- maintaining in a receiving node a neighbor table comprised of each known neighbor node of the receiving node and the communication status of each known neighbor node;
  - receiving a HELLO message containing an address of a new sending node;
  - transmitting a NEIGHBOR message that includes an address of the receiving node to said new sending node;
  - receiving a NEIGHBOR ACK message from said new sending node;
  - updating said neighbor table to reflect discovery of said new sending node and communication status of said new sending node; and
  - transmitting at least one HELLO message comprising only a list of neighbor nodes that have communication status changes.
12. The method of claim 11, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a heard status, wherein neighbor nodes in the heard status have been heard by the receiving node but have not been determined to have heard a previous HELLO message from the receiving node.
13. The method of claim 11, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a symmetric status, wherein neighbor nodes in the

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symmetric status have been heard by the receiving node and have been determined to have heard a previous HELLO message from the receiving node.

14. The method of claim 11, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a lost status, wherein a neighbor node is determined to be in the lost status when a HELLO message containing the address of that neighbor node has not been heard by the receiving node in a predetermined period of time.

15. The method of claim 14, wherein the predetermined period of time corresponds to a HELLO-INTERVAL period multiplied by a predetermined number K.

16. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing the address of the receiving node but not the address of a neighbor node that was previously in the list of neighbor nodes in the lost state.

17. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status.

18. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that



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list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a symmetric status.

19. The method of claim 14, further comprising subsequently transmitting at least one HELLO message containing a list of neighbor nodes in a symmetric status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status.

20. A network having a plurality of nodes, comprising:

a new sending node; and

a receiving node having a neighbor table comprised of each known neighbor node of the receiving node and the communication status of each known neighbor node, wherein said receiving node receives a HELLO message from said new sending node containing an address of said new sending node, wherein said receiving node transmits a NEIGHBOR message that includes an address of the receiving node to said new sending node, wherein said receiving node receives a NEIGHBOR ACK message from said new sending node, wherein said receiving node updates said neighbor table to reflect discovery of said new sending node and communication status of said new sending node, and wherein said receiving node transmits at least one HELLO message comprising only a list of neighbor nodes that have communication status changes.

21. The network of claim 20, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a heard status, wherein neighbor nodes in the heard

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status have been heard by the receiving node but have not been determined to have heard a previous HELLO message from the receiving node.

22. The network of claim 20, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a symmetric status, wherein neighbor nodes in the symmetric status have been heard by the receiving node and have been determined to have heard a previous HELLO message from the receiving node.

23. The network of claim 20, wherein each of said at least one HELLO message includes the address of the receiving node and a list of neighbor nodes that have their communication status changed to a lost status, wherein a neighbor node is determined to be in the lost status when a HELLO message containing the address of that neighbor node has not been heard by the receiving node in a predetermined period of time.

24. The network of claim 23, wherein the predetermined period of time corresponds to a HELLO-INTERVAL period multiplied by a predetermined number K.

25. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing the address of the receiving node but not the address of a neighbor node that was previously in the list of neighbor nodes in the lost state.

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26. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status.

27. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing a list of neighbor nodes in a lost status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a symmetric status.

28. The network of claim 23, wherein said receiving node subsequently transmits at least one HELLO message containing a list of neighbor nodes in a symmetric status, wherein that list of neighbor nodes includes a neighbor node that was in a previous list of neighbor nodes in a heard status.